

AN OVERLOOKED FLORA INDICA

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With one plate

IN JANUARY, 1947, Mrs. C. G. G. Van Steenis, who was checking various references in the library of the Arnold Arboretum, called my attention to Pennant's *Flora Indica* which forms a part of the fourth volume of that author's *Outlines of the Globe*, published in London in 1800. We had never seen any reference to Pennant's work, and a later check of the literature indicated that this *Flora Indica* had been consistently overlooked by botanists. It is not included in Pritzel's *Thesaurus* (1872), nor is it listed in Jackson's *Guide to the Literature of Botany* (1881). The only reference to the work that has been noted is in Rehder's *Bradley Bibliography* 1: 536. 1911, where the Pennant *Flora Indica* is listed, and in 3: 274. 1915, where the fourth volume of Pennant's work is included under its secondary title. Apparently Rehder did not realize that he was dealing with an item that had been thoroughly overlooked by his predecessors. In the vast botanical literature appertaining to British India I do not remember ever having seen a reference to this work.

In June, 1947, I noticed a manuscript *Flora Indica* offered at a very modest price by a London dealer, its author unknown. The catalogue entry was: "Flora Indica.-MS. List of Plants and Flora of Coromandel. Neatly written in a late 18th cent. hand on 145 pages, folio, with index." On the chance that it might prove to be of some interest it was ordered for the Arnold Arboretum library. The manuscript was received on August 7, 1947, there being a pencilled annotation on the inside of the cover "T. Pennant's copy." This is apparently Pennant's signature; the emendations and additions in pencil, in the manuscript, are in the same handwriting. The copy, clearly a preliminary one, was manifestly prepared by an amanuensis, and is remarkably well done. There are minor differences here and there, as between the manuscript and the published text, as certain references were eliminated, others added, and occasional changes made in the discussions. It is a remarkably strange coincidence that just as this paper was being completed we should acquire a copy of the original hand written document that formed the basis of the *Flora Indica* here discussed, the publication of which had been overlooked by all botanists for nearly a century and a half.

Thomas Pennant (1726-1798) was essentially a zoologist, publishing extensively in that field. Britten and Boulger, *Index of Deceased British and Irish Botanists*, ed. 2, 240. 1931, characterize him as a zoologist and antiquary. He is also the author of certain books on travel in Scotland,

Wales, and England, and a description of London. Some of his works were issued in several editions. His projected *Outlines of the Globe** was apparently an extensive work, of which, however, only four volumes were published. He states in the opening sentence of the advertisement, volume one, p. i, that: "These Two Volumes are composed from the XIVth and XVth of my *Outlines of the Globe*." Volumes three and four were issued after his death under the editorship of his son, David Pennant.

All of the volumes of Pennant's work carry the title page *Outlines of the Globe*, but each has a second title page, that of volumes one and two being *The View of Hindoostan*, the first appertaining to western, the second to eastern Hindustan. The second title page of volume three is *The View of India Extra Gangem, China, and Japan*, while that of volume four is *The View of the Malayan Isles, New Holland, and the Spicy Islands*. All of the volumes contain a certain amount of botanical matter, chiefly appertaining to economic species, usually with their proper Latin binomials. Only three plant species are illustrated, *Tectona grandis* Linn.f., *Nepenthes distillatoria* Linn., and *Uvaria altissima* Koenig = *Polyalthia longifolia* (Sonn.) Benth. & Hook.f. These three drawings were prepared by Mr. Sowerby, which undoubtedly explains Pennant's use of the binomial *Uvaria altissima* Koenig.

Volume four is the one of chief interest to botanists, containing as it does Pennant's compiled *Flora Indica*. This is a list with references, not a descriptive flora. I judge that this work represents Pennant's chief excursion into the botanical field. His 1300 species are listed strictly in accord with the binomial system. At first it was thought that it was based largely on Burman's *Flora Indica* (1768), but there are few references to that work. Pennant eliminated most of Burman's Malaysian species, confining his list largely to continental ones, adding many others from the works of later authors. Both works contain approximately the same number of species, about 1300. Apparently the chief basis of the work was the Indian species listed in Reichard's *Systema plantarum* 1 (1779)—4 (1780), for the page references following very many of the accepted names are to that work. In addition, however, he included various species from such works as Osbeck's *Dagbok* (1757), Sonnerat's *Voyage* (1782), Linnaeus f. *Supplementum plantarum* (1781), Roxburgh's *Plants of the Coast of Coromandel* 1 (1795) and 2 (1798), Loureiro's *Flora Cochinchinensis* (1790), Gaertner's *De fructibus et seminibus plantarum* 1 (1788) and 2 (1791), Woodville's *Medical Botany* (1790–93), and from certain works of L'Héritier, J. E. Smith, and perhaps other contemporary authors. He usually included references to the literature, citing many pre-Linnaean and post-Linnaean names; and where he occasionally published a new binomial, he associated the proper references with it.

At least one new binomial is published in the first volume of Pennant's

* Pennant, T. *Outlines of the Globe* 1: i-iv. [1-9]. 1-263. [1-9]. *pl.* 1-9. 1798; 2: [1-8]. 1-374. [1-13]. *pl.* 1-14. 1 *map.* 1798; 3: i-xi. [1-4]. 1-284 [1-13]. 1 *map.* 1800; 4: [1-4]. 1-317. [1-21]. 1800.

work, but our chief interest is in volume four. The text of this last volume is largely devoted to a description of various islands and settlements, with notes on the peoples, plants and animals characteristic of them, the general headings being the Malayan Isles, Manila Islands, New Holland, Spicy Islands, Molucca Islands, Papua Islands, Land of Papua or New Guinea, New Britain, New Ireland, and "New Guinea again." The last part of this volume, pages 237-317, with eight additional pages of index, comprises Pennant's *Flora Indica*.

It is not clear that Pennant actually planned to publish new binomials, yet he definitely did so in a few cases. His new names, as far as noted, are disposed of below. The asterisk indicates their non-inclusion in *Index Kewensis* and its *Supplements*. Under the current provisions of the International Code of Botanical Nomenclature, where Pennant's names have priority, they should be accepted, but for the most part their listings merely adds to synonymy. *Piper macropiper* Pennant, *Ficus teregam* Pennant, and *Ficus peru teregam* Pennant (1800) seem to have clear priority, over *Piper arborescens* Roxb. (1814), (*P. miniatum* Blume, 1826), *Ficus wassa* Roxb. (1832), and *Ficus conora* King (1888), respectively. Because Pennant proposed various two-word binomials such as *arbor sambac*, *parana rubra*, *lobus litoralis*, *peru teregam*, some may object to their acceptance, but clearly these were all proposed as binomials. Two of the new binomials are due to Pennant's having inadvertently entered the names under the wrong generic designation. Several are merely due to typographical errors, and are perhaps unworthy of being listed.

Acalypha amentacea Roxb. Fl. Ind. ed. 2, 3: 676. 1832; Merr. Interpret. Herb. Amb. 322. 1917.

Acalypha spiciflora Burm.f. Index Alt. Herb. Amb. [5]. 1769, non *A. spiciflora* Burm.f. Fl. Ind. 203. 1768.

Achyranthes **spiciflora* Pennant, Outl. Globe 4: 257. 1800 (Fl. Ind. 257).

Pennant's reference is "Cauda felis agrestis, Rumph. Amb. iv. p. 84." This same reference, plus *pl. 37. fig. 2*, is erroneously cited by Burman f. Fl. Ind. 203. 1768, as representing *Acalypha spiciflora* Burm.f.; but the form actually described and illustrated by him is *Cleidion spiciflorum* (Burm.f.) Merr. Interpret. Herb. Amb. 322. 1917 (*C. javanicum* Blume). Here Pennant erred, for clearly his intention was to make the entry under *Acalypha*, but by error placed it under *Achyranthes*.

Acalypha hispida Burm.f. Fl. Ind. 303. *pl. 61. fig. 1*. 1768; Merr. Interpret. Herb. Amb. 323. 1917.

Achyranthes **hispida* Pennant, Outl. Globe 4: 257. 1800 (Fl. Ind. 257).

Pennant's reference is to "Cauda felis Rumph. Amb. IV. p. 82. t. 35 [36]." Here he erred in placing what is an *Acalypha* under the wrong generic designation, *Achyranthes*.

Dioclea reflexa Hook.f. Niger Fl. 306. 1849; Merr. Interpret. Herb. Amb. 280. 1917.

?*Phaseolus* **parana rubra* Pennant, Outl. Globe 4: 288. 1800 (Fl. Ind. 288).

Pennant's whole reference is "*Rumph. Amb. v.9.C.5*," i.e., *Parrana rubra* Rumph. Herb. Amb. 5: 9. *pl. 15*. 1747. The plate is not good, but I

suspect that Rumphius attempted to represent the species currently known as *Dioclea reflexa* Hook.f. See the discussion in Merrill, Interpret. Herb. Amb. 280. 1917.

*Epidendrum *fervum* Pennant, Outl. Globe 4: 296. 1800 (Fl. Ind. 296), *sphalm.* = *E. furvum* Linn. = *Vanda furva* (Linn.) Lindl.

*Epidendrum *spatulatum* Pennant, l.c., *sphalm.* = *E. spathulatum* Linn. = *Vanda spathulata* (Linn.) Spreng.

*Ficus *teregam* Pennant, Outl. Globe 4: 313. 1800 (Fl. Ind. 313).

Ficus wassa Roxb. Fl. Ind. ed. 2, 3: 539. 1832; Merr. Interpret. Herb. Amb. 193. 1917.

Pennant's reference is "Caprificus aspera, *Rumph. Amb.* iii. 150 C.9," i.e., Herb. Amb. 3: 150. *pl.* 94. 1732. Here, as with his other new binomial in *Ficus*, he did not take the specific name from Rumphius, but accepted one from Rheede's *Hortus Malabaricus* because of Burman's note at the end of the Rumphian description "Videtur haec esse Teregam *H. Malab. part* 3, *Tab.* 60 . . ." The local names given by Rumphius are *gobi*, *sajor wassa*, *wassa*, *utta sasuum*, *haat adam*, and *krotje*. The species is still known in Amboina as *wassa*.

*Ficus *peru teregam* Pennant, Outl. Globe 4: 313. 1800 (Fl. Ind. 313).

Ficus conora King, Ann. Bot. Gard. Calcutta 1: 103. *pl.* 131. 1888; Merr. Interpret. Herb. Amb. 195. 1917.

Pennant's reference is "Caprificus viridis *Rumph. Amb.* iii. 152.C.10." This is Chapter 10, and to the entry should be added *pl.* 95. The local name given by Rumphius is *mussu*, but as in the preceding case Pennant took his specific name from Burman's note at the end of the Rumphian description, p. 153: "Ramum exhibit *Caprifici viridis*, quae sine dubio est Peru Teregam *H. Malabar.* Tom. 3, *Tab.* 61 . . ." Thus we have two specific names for strictly Malaysian species of *Ficus* taken from the vernacular names of two different species from Malabar. In view of the fact that Pennant eliminated most of the Malaysian species listed in Burman's *Flora Indica* one suspects that, in proposing the two new specific names in *Ficus*, he thought that he was providing names for the continental forms described by Rheede; however, his references are strictly to Rumphius' *Herbarium Amboinense*, and the two species must be interpreted by what Rumphius illustrated and described.

Jasminum sambac (Linn.) Ait. Hort. Kew. 1: 8. 1879.

Nyctanthes sambac Linn. Sp. Pl. 6. 1753.

*Nyctanthes *arbor sambac* Pennant, Outl. Globe 4: 239. 1800 (Fl. Ind. 239).

The record is clear from the references to certain standard pre-Linnaean and post-Linnaean works. Pennant gives the page reference to Reichard's *Systema Plantarum* 1: 15. 1779, where, however, the entry is correctly given as *Nyctanthes sambac* Linn. Presumably he altered the specific name to make it agree, in form, with *Nyctanthes arbor tristis* Linn., which he also listed; or he may have taken the specific name from some pre-Linnaean work.

Madhuca indica J. F. Gmel. Syst. Nat. 2: 799. 1791.

Bassia latifolia Roxb. Pl. Coromandel 1: 20. *pl.* 19. 1795; Hook.f. Fl. Brit. Ind. 3: 544. 1882.

**Mahwah* **hamiltonia* Pennant, Outl. Globe 4: 280. 1800 (Fl. Ind. 280).

**Máhwah* (or *Madhúca*) C. Hamilt. As. Research. 1: 300. 1 *pl.* 1788.

Bassia villosa Wall. List. no. 4165. 1830, *nom. nud.*

Madhuca latifolia Macbr. Contr. Gray Herb. 53: 17. 1918.

One might not be willing to accept C. Hamilton's original description of *Mahwah* as a formal generic one, although he provided a rather full technical description, and his plate shows the arrangement of the flowers and their details. He further stated that the tree belonged in the Polyandria Monogynia of Linnaeus "but of a genus not described by him.*" The tree that he described occurred in Behar and neighboring countries, there known as the *Máhwah* or *Máwee*, its Sanscritic name being *Madhúca*. The name *Madhúca* also appears on the plate. This Hamilton paper is the sole basis of Gmelin's formal description of the genus *Madhuca* Gmelin, and of its type species, *M. indica* J. F. Gmelin, Syst. Nat. 2: 799. 1791. Roxburgh, Pl. Coromandel 1: 20. 1795, also cited Hamilton's paper in the description of *Bassia latifolia* Roxb. Pennant, perhaps inadvertently, published a binomial under *Mahwah*, although he provided no description, so one must refer back to C. Hamilton's description to understand what was intended by Pennant's name. Here we have a formally published binomial under a generic name never recognized by other botanists.

Doctor Lam, Bull. Jard. Bot. Buitenz. III. 7: 182, 265. 1925, 8: 463. 1927, accepted the binomial *Madhuca longifolia* (Koenig [Linn.]) Macbr. Contr. Gray Herb. 53: 17. 1918, reducing *Bassia latifolia* Roxb. and *Madhuca indica* Gmelin to synonymy. Koenig's specimen is in the Linnaean herbarium and from a photograph of it available to me, and the comparative descriptions of *Bassia latifolia* Roxb. and *B. longifolia* Linn. by Hooker f. Fl. Brit. Ind. 3: 544. 1882, I am convinced that two different species are involved. To the synonymy of *Madhuca longifolia* (Linn.) Macbr. may be added *Bassia illipe* Linn. ex Jackson, Ind. Linn. Herb. 45. 1912, and *Illippe malabarorum* Koenig ex Linn. Mant. 2: 563. 1771, *nom. in syn.* Koenig was the author of the generic name *Bassia* in Linn. Mant. 2: 555. 1771, but Linnaeus was the author of the binomial *Bassia longifolia*, op. cit. p. 563, for he cited Koenig's different specific name as a synonym.

Mucuna gigantea (Willd.) DC. Prodr. 2: 405. 1825; Merr. Interpret. Herb. Amb. 277. 1917.

Dolichos giganteus Willd. Sp. Pl. 3: 1041. 1800 [1802].

Zoophthalmum giganteum Prain, Jour. As. Soc. Bengal 66(2): 68. 1897.

Phaseolus **lobus litoralis* Pennant, Outl. Globe 4: 289. 1800 (Fl. Ind. 289).

Pennant clearly confused two different species here, his reference being "Phaseolus *Lobus litoralis*, Rumph. Amb. V, 10 C. 6" (Rumph. Herb. Amb. 5: 10. *pl.* 6. 1747), and "Cacara pilosa, Rumph. Amb. V. p. 392. c. 35." These represent two very different species, the *lobus litoralis* belonging with

* Hamilton, C. A Description of the Máhwah Tree. As. Research. 1: 300-308. 1 *pl.* 1788.

Mucuna gigantea (Willd.) DC., and the *Cacara pilosa* appertaining to *Mucuna aterrima* (Piper & Tracy) Merr. Interpret. Herb. Amb. 279. 1917 (*Stizolobium aterrimum* Piper & Tracy). Because of the confusion of the two by Pennant, Willdenow's slightly later specific name is retained, although from the first entry by Pennant, *lobus litoralis*, it is clear that what he probably meant was *Mucuna gigantea* (Willd.) DC.

Piper *macropiper Pennant, Outl. Globe 4: 242. 1800 (Fl. Ind. 242).

Piper arborescens Roxb. Hort. Beng. 80. 1814; Fl. Ind. 1: 161. 1820, ed. 2, 1: 159. 1832; Merr. Interpret. Herb. Amb. 180. 1917.

Piper miniatum Blume, Verh. Bat. Genootsch. II: 166. 1826.

Pennant's hitherto overlooked binomial is based wholly on Rumphius, Herb. Amb. 5: 46. *pl.* 28. *fig.* 1. 1747, this illustration being an excellent representation of a characteristic and widely distributed species. It extends from the Malay Peninsula and Sumatra to Java, the Philippines, Celebes, Moluccas, New Guinea and the Solomon Islands. *Brass* 2133 in the herbarium of the Arnold Arboretum, from Bougainville Island, is identified by Trelease as representing a new species, as yet unpublished. Comparison with a large suite of specimens and with Miquel's very fine plate representing *Piper miniatum* Blume, Nov. Act. Acad. Nat. Cur. Suppl. 21: *pl.* 28. 1844, clearly indicates that Trelease's supposed new species is the one discussed here.

Polyalthia longifolia (Sonn.) Benth. & Hook.f. ex Hook.f. & Th. in Hook.f. Fl. Brit. Ind. 1: 62. 1872; King, Ann. Bot. Gard. Calcutta 4: 72. *pl.* 99. 1893.

Uvaria longifolia Sonn. Voy. Ind. Orient. 4: 399. *pl.* 131. 1782, Reise 2: 244. *pl.* 131. 1783; Lam. Encycl. 1: 597. 1795; Dunal, Monog. Anon. 109. 1817; Roxb. Fl. Ind. ed. 2, 2: 664. 1832.

*Uvaria *altissima* Koenig ex Pennant, Outl. Globe 1: 83. *pl.* 5. 1798, 4: 280. 1800 (Fl. Ind. 280).

Pennant's first entry is "The Poon tree, *Uvaria altissima* of Koenig," but he provided no description. He referred to Sonnerat's species as "*M. Sonnerat*, ii. p. 233, tab. 131, gives a figure of it, under the name of *L'Arbre de Mâtûre*." In his second listing the entry is *Uvaria "altissima. Uv. longifolia, L'Arbre de Nature [Mâtûre] Sonnerat*, ii. 233. tab. 131.-Poon tree. Mast tree. *Outlines of the Globe*, 1: p. 83. tab. 5." Sonnerat's species was validly published with a short Latin diagnosis; this diagnosis is not repeated in the German edition of 1783. Curiously most of the references in botanical literature are to the German translation of 1783, not to the original French edition of 1782. In Sonnerat's original work "*Uvaria lanceolata* Linn. *Syst. nat.* gen. 692, sp. 4" appears as a synonym. The reference is to Gmelin's *Syst. Nat.* ed. 13, 2: 868. 1791; Linnaeus never published such a binomial. Manifestly what Gmelin considered was *Uvaria lanceolata* Sw. *Prodr.* 87. 1788 = *Oxandra lanceolata* (Sw.) Baill., of the West Indies, as Gmelin, like Swartz, cites a reference to P. Browne. In many standard works the binomial *Uvaria longifolia* is erroneously credited to Lamarck, usually, however, without a reference to the place of publication. A glance at Lamarck's *Encycl.* 1: 597. 1785, shows that he merely accepted Sonnerat's species, amplified the description,

commenting on Sonnerat's poorly engraved plate. This erroneous citation of Lamarck as the authority for the binomial commenced with Dunal in 1817.

Syzygium malaccense (Linn.) Merr. & Perry, Jour. Arnold Arb. 19: 215. 1938.

Eugenia malaccensis Linn. Sp. Pl. 470. 1753.

Jambosa malaccensis DC. Prodr. 3: 286. 1828.

Eugenia **nigra* Pennant, Outl. Globe 4: 277. 1800 (Fl. Ind. 277), non DC., 1828.

The basis of Pennant's binomial was "*Rumph.* i. 125. tab. 38. fig. 1," i.e., *Jambosa nigra* Rumph. Herb. Amb. 1: 125. pl. 38. fig. 1. 1741. It is a form of *Syzygium malaccense* (Linn.) Merr. & Perry, with unusually dark colored fruit (*Eugenia malaccensis* Linn. var. *nigra* Blume, Mus. Bot. Lugd.-Bat. 1: 91. 1849). The name *Eugenia nigra* DC. Prodr. 3: 286. 1828, based on Brazilian material, is invalidated by Pennant's earlier one.

**Trigonsanthes* Reichard, Syst. Pl. 4: 199. 1780; Pennant, Outl. Globe 4: 304. 1800 (Fl. Ind. 304), *sphalm.* = *Trichosanthes* Linn.

**amara* Reichard, Syst. Pl. 4: 200. 1780, *sphalm.* = *Trichosanthes amara* Linn.

**anguina* Reichard, op. cit. 199, *sphalm.* = *Trichosanthes anguina* Linn.

**cucumerina* Reichard, l.c., *sphalm.*; Pennant, Outl. Globe 4: 304. 1800 (Fl. Ind. 304), *sphalm.* = *Trichosanthes cucumerina* Linn.

**neruifolia* Reichard, l.c., *sphalm.* = *Trichosanthes nervifolia* Linn.

**nervifolia* Pennant, Outl. Globe 4: 304. 1800 (Fl. Ind. 304), *sphalm.* = *Trichosanthes nervifolia* Linn.

Curiously Reichard records the generic name correctly as *Trichosanthes* Linn., but under this generic entry he lists the four species as *Trigosanthes amara*, *anguina*, *cucumerina*, and *neruifolia*. In his unpagged *Index generum* the entry is *Trichosanthes*, while in his *Index synonymorum* it appears as *Trigosanthes*. The Pennant entry of 1800 is *Trigosanthes*.

EXPLANATION OF PLATE

UPPER FIG. The opening part of the Pennant manuscript.

LOWER FIG. A part of the first page of the printed document.

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